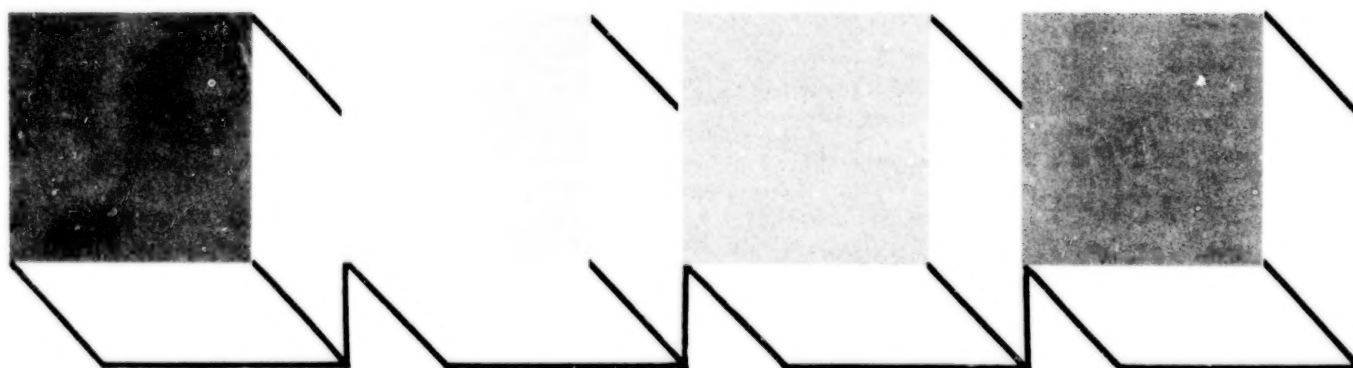


Program Announcement

ORIGINAL

Comprehensive Assistance to Undergraduate Science Education

guide for
the preparation of proposals



Closing Date. First Friday of November

NATIONAL SCIENCE FOUNDATION
Division of Science Education Resources Improvement
Washington, D.C. 20550

This Announcement, which supersedes SE 80-30, is intended for use in the CAUSE program annually until superseded, subject to the availability of funds. The issuance of a new Announcement will be noted in the annual "Guide to Science Education Programs." To assure that this Announcement is still active, contact the CAUSE program: 202/282-7736.

AREAS OF SPECIAL INTEREST

In the course of assessing local problems and needs for improvement of undergraduate science education, institutions are encouraged to examine and where appropriate incorporate activities designed to increase the participation of minorities, physically handicapped, or women in science and engineering or to better prepare future teachers of early adolescents. The incorporation of appropriate technology into course and curriculum developments is also encouraged.

CAUSE SPECIAL PROJECTS

The Special Projects category under the Comprehensive Assistance to Undergraduate Science Education program is designed to encourage alternate, imaginative approaches to meeting the three primary objectives of CAUSE as stated on page 1 of this Announcement. In addition, proposals must show how proposed activities will ultimately enhance local institutional initiatives for improving undergraduate science education.

Special Project proposals may be submitted by CAUSE grantees or any other non-profit institution or consortium of institutions of higher learning in the United States with formally constituted programs in science which award an associate, baccalaureate, or equivalent degree. Only one Special Project or regular proposal may be submitted per year. Proposals normally eligible for consideration in the regular CAUSE competition, as described in the remaining portions of this Announcement, cannot be considered for Special Project support. In addition a Special Project proposal must not be eligible for submission to other NSF programs.

Except for exceptional circumstances financial support for Special Projects may not be requested for periods greater than two years in duration or for sums exceeding \$100,000. No matching of NSF funds is required.

Applicants must provide a brief description (1-2 pages—preliminary proposal) of the intended project to the CAUSE program office, SERI, National Science Foundation, Washington, D.C. 20550. Foundation staff will review preliminary proposals and either encourage or discourage the submission of a formal proposal. The formal proposal format (which is expected to generally follow the format for regular proposals), and necessary forms will also be provided at this time. Preliminary proposals may be submitted at any time, but formal proposals must be received at the Foundation on or before the closing date specified on the cover of this Announcement to ensure consideration for funding in the same fiscal year. Formal proposals will be evaluated against the following review criteria: need, match between project objectives and CAUSE program objectives, project plan, management plan, evaluation plan, expected benefits, and imagination.

CAUSE PROGRAM HISTORY

Proposals and Awards

	1976	1977	1978	1979	1980
Total Proposals Submitted	760	483	346	307	302
Dollars Requested (Millions)	\$150	\$82	\$60	\$55	\$59
Number of Awards	59	69	73	72	66
Funds Awarded (Millions)	\$9.9	\$10.8	\$12.9	\$13.3	\$13.0

Comprehensive Assistance to Undergraduate Science Education
Division of Science Education Resources Improvement
National Science Foundation
Washington, D.C. 20550
(Telephone: 202/282-7736)

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COMPREHENSIVE ASSISTANCE TO UNDERGRADUATE SCIENCE EDUCATION

PROGRAM SUMMARY

OBJECTIVES AND RATIONALE

The Comprehensive Assistance to Undergraduate Science Education (CAUSE) program encourages improvement in quality and effectiveness of undergraduate science education in institutions of higher education. CAUSE will provide up to \$250,000 over 3 years in response to detailed plans from science departments, groups of departments or divisions (including the entire science effort of an institution), or consortia of institutions.

The primary objectives of the CAUSE program are to:

- improve the quality of the Nation's science instruction at the undergraduate level;
- strengthen the resources for undergraduate science education components of 2-year and 4-year colleges and universities; and
- enhance the capability of institutions for self-assessment, management, and evaluation of their science programs.

In general, CAUSE attempts to respond to the continuing need for revitalization of science instruction, as identified through periodic reassessment of institutional goals.

Federal support is intended to result in improvements that will be maintained beyond the actual period of funding. Improvements in quality and effectiveness do not however imply quantitative growth; in many cases, growth in enrollment or staff size may be counter to improvement in quality and effectiveness.

CAUSE has great flexibility. Any supportable approach to the improvement of undergraduate science

education, for science majors or for nonscience students, via traditional or nontraditional courses, curricula, or teaching modes, is *eligible*. Whether the planned activity is *competitive*, however, will be determined by the case that is made for it by the proposer.

THE CAUSE MODEL

For several years, the Foundation has conducted programs that address specific aspects of undergraduate science education such as special training for undergraduates, updating the science background of college faculty members, assistance in the purchase of scientific equipment for undergraduate instruction, development of teaching materials, etc. In contrast, CAUSE offers the opportunity for institutions to pursue the development and implementation of broader more integrated activities. Proposals should arise from a careful, objective, and thoughtful examination of existing problems, knowledge of the work of others, and the pros and cons of alternative approaches to solutions, and thus result in rational and reasonable plans to accomplish desired ends. Within the eligibility, budget and time limitations explained below, a CAUSE proposal should describe an institution's single best plan for improving undergraduate science instruction at the time it is submitted. Individual proposals and supported projects vary considerably in their comprehensiveness. Taken in aggregate, however, they represent a comprehensive approach to higher education's present perception of undergraduate science education needs as locally identified by individual institutions.

ELIGIBILITY

INSTITUTIONS/ORGANIZATIONS

The CAUSE program will accept proposals from any nonprofit institution of higher learning in the United States with formally constituted programs in science which award an associate, baccalaureate, or equivalent degree.

Members of a recognized "system" of institutions are each eligible as an individual institution when separated geographically and administratively from other campuses of the system. That is, such a campus must not be administratively subordinate to another campus in the system. A branch campus seeking separate eligibility should consult the CAUSE program staff before submission of a proposal, and be prepared to provide appropriate details to support its request.

Formally organized consortia of eligible institutions having an established central office and approved fiscal management capability are eligible. *Ad hoc* consortia of eligible institutions are also eligible. However, proposals on behalf of such consortia are to be submitted by one of the institutions in the consortium which has been designated to act as fiscal agent and management agent for the group.

AREAS OF STUDY

"Science" as used in these guidelines applies to the biological, engineering, mathematical, physical and social sciences. Proposals may also deal with interdisciplinary areas, e.g., geochemistry, earth sciences, etc., the history and philosophy of science, and technician/technology training.

Social work, clinical fields, business administration, and vocational programs are not supportable.

PROJECT ACTIVITIES

Projects may focus on undergraduate instruction activities in science designed for science majors,

nonscience students, students preparing specifically for careers as teachers of elementary or secondary school science, or students preparing for technological careers.

Institutions offering advanced degrees may request support only for activities which are designed primarily for the benefit of undergraduate students. While such improvements may ultimately benefit graduate students, funds cannot be requested for the purpose of improving graduate courses, facilities or instructional activities.

Although proposals may include a variety of educational activities support may *not* be requested or used for:

- shortfalls in regular instructional budgets (i.e., past or anticipated budget deficits);
- scholarships or student tuition (as distinguished from student compensation for service to the project);
- augmentation of salaries of individuals pursuing regularly assigned duties;
- staff or graduate assistant salaries for regular teaching of courses (except for course development components, i.e., testing, revision, pilot trial, etc.); or
- contingencies (i.e., unforeseen expenditures).

PROPOSALS PER INSTITUTION

Only one proposal may be submitted by an institution under this Announcement, but each institution may also participate in one additional proposal as a member of a consortium. A proposal may request up to 3 years' support.

Institutions which have received a CAUSE grant will be eligible to submit under this Announcement if their grant will terminate by December 31, of the year of submission.

PROPOSAL PREPARATION

INTRODUCTION

The major issues which will be judged in the competition for support are contained within the sections that follow. Therefore, it is important that the proposal be organized in the order prescribed and that all pertinent information be provided as requested within each section.

It should be noted that a common complaint by reviewers is that proposals fail to be sufficiently concise and specific in describing project activities, anticipated outcomes, and evaluation procedures. First-time proposers should consider seeking advice and preliminary review from experienced colleagues. The CAUSE program staff will answer technical questions that arise in the course of proposal preparation, and can provide names of institutions in their region which have received CAUSE grants in specific subject matter areas. However, staff members will not make an assessment of the overall merit of a proposal, nor speculate about how it is likely to fare in the competitive review process; in addition, the NSF cannot offer proposal writers any assurance that incorporating the suggestions of staff members or others, including reviewers of a prior-year proposal, will result in support.

CAUSE awards are intended to support integrated, carefully planned projects to improve an institution's science education programs. The mere aggregation of activities that might be supported by such NSF programs as the Instructional Scientific Equipment Program, Undergraduate Research Participation, and others does not constitute a viable CAUSE proposal.

Plans for improvement of science instruction must include an assessment of what is needed and a formulation of specific activities for meeting those needs.

Proposals must reflect an understanding of the current state of the science involved and of the applicable pedagogical advances. Requests to NSF for support to develop materials or techniques for instruction should be based upon a determination that such materials or techniques are not already available elsewhere.

Since the ultimate target is the undergraduate student, proposals should indicate how the project will have an impact on the student's understanding of science.

Proposals should be as specific as possible in the discussion of how the various proposed activities will be carried out so that the feasibility, practicality, and potential gain of the project can be assessed by reviewers.

The proposal must include a plan for maintaining, in post-grant years, the improvements achieved. This is the plan the Local Review Statement should reference in defining the institutional commitment.

Significant expansion of facilities or staff in anticipation of increased enrollment is normally perceived as unlikely to improve the quality of science education. Proposals calling for additional faculty must provide thorough justification (including current and projected courseloads) for such expansion. Also, such proposals should make specific plans and commitments for maintaining such expansion without additional NSF support in post-grant years, or should give reasons for considering the expansion only temporary.

INTENT-TO-SUBMIT

Institutions are urged to return an intent-to-submit card (see inside back cover of this Announcement) at least one month before the closing date. This information is very important in helping the Foundation to prepare for an adequate and appropriate review.

COVER PAGE

Prepare the Cover Page in accordance with the form provided on page 12.

PROJECT SUMMARY

Use the form provided on page 14, single space if necessary. The summary should be a concise description of the project, limited to 22 pica or 18 elite typewriter lines. It should contain a statement of objectives, an outline of project operations, and a description of anticipated outcomes. *The summary should be written so that a layperson can understand the use of Federal funds in support of the project.* It should therefore be worded with considerable care, in a manner suitable for general distribution to the public.

IMPORTANT NOTE: The information provided on the "Project Summary Form," especially the field of science and engineering and major discipline codes, is used by the program staff for a variety of purposes including the proper assignment of proposals to evaluation panels. Two separate entries selected from the list on page 13 must be made under items 3 & 4, as follows:

3. Major Discipline Code: Enter as many of the codes as necessary. Categorization of proposals and general background of reviewers will be strongly influenced by these entries.

4. Specific Subject Matter: Enter as many codes as necessary, in descending order of importance to the project.

BUDGET

Use the forms on pages 15-17. Instructions are on pages 11 and 18.

TABLE OF CONTENTS

The proposal should be organized in the following order:

- Cover Page
- Project Summary
- Budgets
- Table of Contents
- Local Review Statement
- Project Description
- Project Evaluation
- Information Regarding NSF Applicants'
 - Current Science Education and
 - Research Activities
- Appendices

LOCAL REVIEW STATEMENT

(Limit to 2 pages double-spaced). A requirement for CAUSE support is that the proposed activity not only contribute to the improvement of instruction in science, but that it do so through projects that are consistent with the local environment, i.e., the individual institution's overall science education objectives.

Therefore, a statement, referred to as the "Local Review Statement", is an essential part of each proposal. It is expected to indicate the administration's interest in and approval of the plans embodied in the proposal. The statement should (a) explain how the proposed project relates to the institution's local environment, (b) describe the institution's commitment to support the activities called for in the proposal and to maintain the improvement in post-grant years.

This statement should guarantee active participation, not merely passive acquiescence, to the submission of a proposal and must be signed by the authorized institutional representative.

It is strongly suggested that special care be given to establishing priorities within the proposing institution. Therefore it is imperative that *all* science fields be considered in establishing institutional priorities.

In the case of a consortium, either formal or *ad hoc*, the Local Review Statement should be a joint statement covering the areas previously indicated in a manner appropriate to a consortium.

The statement must be separate and signed by the authorized representative of each of the institutions involved in the proposal.

PROJECT DESCRIPTION

(Limit to 20 double-spaced, nonreduced pages, printed on one side only, on 8½" x 11" paper). Page limitation must NOT be exceeded. Experience indicates that exceeding this limitation may be disruptive of panel operations and result in an inadequate opportunity for a full panel review.

Although the format of the Project Description narrative is not prescribed, experienced proposal writers suggest that writing to the review criteria (see page 9) is often the most effective approach. We do know that a narrative whose content is organized to follow the review criteria will greatly aid the reviewer's task. If the review criteria are used as an outline, the following topics should be included: Needs, Project Objectives, Project Plan, Management, Project Evaluation and Expected Benefits.

PROJECT EVALUATION

(Limit to 2 pages double-spaced). One of the primary objectives of CAUSE is to "enhance the capability of institutions for self-assessment, management and evaluation of their science programs". Although evaluation plans should be related to project objectives, and may vary in complexity, two general forms of evaluation are suggested. The first should be designed to provide the project's staff with whatever information is needed to monitor and adjust the project's progress toward its stated goals and objectives. The primary beneficiaries of this evaluation are the project's staff. The proposal should describe what, how, and when such information is to be needed by the staff.

The second form of evaluation should be designed to provide the project and other interested parties with an overview of project outcomes. Projects often have outcomes which go beyond the scope of their original intent. Thus it is best that this evaluation be designed and conducted by external, objective persons with appropriate expertise. Such experts may be available on campus or may have to be obtained from other sources. No one evaluation plan will fit all projects. Plans should be tailor-made to meet project needs, scope and complexity.

Proposers may include the cost of the evaluation in their request for CAUSE funds. Costs for evaluation may vary considerably, but should not exceed 10 percent of total project costs.

Additional information on project evaluation is available from the CAUSE program upon request. 202/282-7736.

Proposers should keep in mind the idea that some CAUSE projects have provided ideal settings for students and faculty to conduct science education research which have produced theses and publishable articles. The presence of a science education research component is not a review criterion, but the CAUSE

program encourages such research when and where appropriate and advantageous.

**INFORMATION REGARDING NSF
APPLICANTS' CURRENT SCIENCE
EDUCATION AND RESEARCH ACTIVITIES**

Each proposal must list all current projects, in addition to the proposed project, to which the senior personnel have committed a portion of their time, whether or not salary for the person involved is included in the budgets of the various projects. This information should include the titles and dates of current grants or contracts, the source of funds, annual budget levels, and the person-months devoted to each project by each of the senior personnel. The proposal

must also provide analogous information for *all* other proposed projects which are being considered by, or which will be submitted in the near future to, other possible sponsors including other Foundation programs.

APPENDICES

(Limit to 15 pages.) Project staff vitae plus other material as desired and needed should be placed in an appendix to the proposal.

BINDING OF PROPOSAL

Staple in upper left-hand corner only. Pages should be numbered in lower right-hand corner. No other binding is needed or desired.

FISCAL CONSIDERATIONS

FISCAL LIMITS

The appropriateness of the size of the request must necessarily be judged during the review, but proposals will not be selected for award on the basis of size alone. Since each proposer will be facing different problems and proposing different solutions in the local context, no prescriptions are offered by the Foundation on how much those solutions should cost or which solutions should be proposed. Proposers are expected to bring their best judgment to bear on the question of what constitutes a reasonable approach and a reasonable request.

It is anticipated that requests will vary greatly in size. The 66 awards funded in 1980 ranged from \$60,000 to \$250,000 while the average award was \$197,200. The NSF will not contribute more than \$250,000 to any one project. The maximum period for a project is three years.

EQUIPMENT/CONSTRUCTION/RENOVATION

CAUSE is not intended to support projects oriented principally toward the acquisition of equipment, construction, or renovation. Equipment purchases, construction, or renovation can be included as part of an overall comprehensive plan for improving undergraduate science education if justified in the proposal as essential to the success of the project.

Equipment

The Foundation defines equipment as having a minimal unit acquisition cost of \$300 or more and an expected life of one year or more. If properly justified, proposers may request scientific equipment (usable only for scientific or technical training), and equipment that is directly related to science instruction, i.e., computers, A-V equipment, demonstration apparatus, specially equipped vehicles, etc. However, support may not be requested for office equipment, classroom furniture or similar items which are not specifically science-oriented or which can be considered basic to all educational activities within institutions.

If a proposal for NSF support involves the purchase or lease of special purpose equipment, having a unit acquisition cost exceeding \$10,000, it must contain a certification by the authorized organizational representative that the equipment is (a) essential and not reasonably available and accessible to the project and, if funded by NSF, will be subject to (b) reasonable inventory controls and maintenance procedures and (c) organizational policies designed to enhance multiple or shared use on other projects, if such other use will

not interfere with the work on the project for which the equipment is being acquired.

Construction/Renovation

Support for new building construction and renovation is limited to \$100,000 to any grantee and can be applied only to relatively small construction and renovation projects.

NSF grants resulting in award of subcontracts of \$10,000 or more for construction, paid for in whole or part with grant funds, include a condition that Section 202, Executive Order 11246, as amended, be incorporated in the construction subcontract providing for equal employment opportunity, and notice to appropriate regional office of the U.S. Department of Labor.

Flood Disaster

Public Law 93-234, the Flood Disaster Protection Act of 1973 ("the Act"), provides that no Federal agency shall approve any financial assistance for "acquisition or construction" purposes for use in any area identified by the Department of Housing and Urban Development as an area having special flood hazards and in which the sale of flood insurance has been made available under the National Flood Insurance Act of 1968 unless the building and any related equipment is covered by acceptable flood insurance.

With respect to NSF awards, proof of compliance with the Act is necessary in proposals where budget line item amounts for repair, renovation, construction or improvement exceed \$10,000. In those instances, the proposal should contain either a certification that (a) the facilities are not located in an identified special flood hazard area or (b) adequate flood insurance under this Act has been obtained.

PERSONNEL SUPPORT

Funds may be requested to provide faculty replacements for the project director or for key faculty members engaged in project activities. The following methods for handling such cases are suggested:

- (a) If the faculty member is given released time by the institution during the academic year, either for the full year or a fraction thereof (e.g., one semester, or one or more quarters), the institution should continue to provide the faculty member's usual salary and benefits in the normal way, and request funds to provide a replacement for the faculty member during this

period and for the extent to which the faculty member is involved in project activities.

- (b) Support for faculty activity in the summer may not exceed two-ninths of a faculty member's current academic year salary for full-time involvement for an 8-week period. Support for shorter periods of time or for part-time involvement should be proportionately reduced.
- (c) Requests for support for student assistants engaged in project activities should be at the approved work-study rate in effect at the institution.
- (d) The National Science Foundation limits the maximum rate of compensation paid to consultants involved in an NSF grant project to \$193.00 per day. (Since this rate may change in subsequent fiscal years, proposers should contact NSF for updated information.)
- (e) For each year of the project, funds should be requested to cover the round-trip jet-economy fare to Washington, D.C. plus an amount for subsistence calculated according to institutional policy to enable the project director to attend a 3-day meeting of project directors.

CONTRIBUTIONS TO PROJECT COSTS

Since CAUSE is intended to provide assistance to institutions in improving their own programs of science education, or in enhancing their own capabilities to conduct such improvement activities, recipients of NSF support under this program will be required to contribute to the overall project costs.

Institutions may request the Foundation to supply up to 2/3 of the total costs of a project, but in no case will the total NSF award exceed the fiscal limits described above. Institutions must supply at least 1/3 of the total project costs or, equivalently, 1/2 of the NSF contribution. NOTE: Funds from a CAUSE grant or the institutional contribution to it cannot be counted

as an institutional contribution to another Federally supported project.

The institutional contribution may be accomplished at any time following the closing date under which the awarded proposal was submitted, but before the grant expiration date specified in the grant document. Recipient institutions must maintain records demonstrating compliance with this requirement. Such records are subject to audit by the Foundation or its authorized representative.

Institutions may, in accordance with their own preferences, direct their institutional contribution toward particular budget items. However, all activities represented in the *total project budget* must be eligible for NSF support and must be necessary to the success of the project. The particular division of total project costs between the request to NSF and the institutional contribution will not be a factor in the proposal evaluation by reviewers.

INDIRECT COSTS

Each proposal may include indirect costs at the rate approved for the institution. If the institution has an Educational Services Agreement rate, this rate should be applied. Proposals should specify the institution's approved rate and, if different, the rate requested for the proposed activities. The approved rate and the base for the computation may be obtained from the business officer of the institution. That person should contact the Foundation's Cost Analysis Section if information is needed with regard to an approved rate. (202/357-7547)

In the case of proposals from formally organized consortia, the above procedures should be followed if an approved indirect cost rate is available for the consortium. In all other cases of consortium proposals, indirect cost amounts for the cooperating institutions should be computed using the approved rates for those institutions.

PROPOSAL SUBMISSION

DEADLINE

PROPOSALS MUST BE RECEIVED IN THE FOUNDATION BY 5:00 PM ON THE FIRST FRIDAY OF NOVEMBER TO INSURE INCLUSION IN THE COMPETITIVE REVIEW PROCESS ESTABLISHED FOR THIS PROGRAM.

NUMBER OF COPIES AND ACKNOWLEDGMENT CARDS

Fifteen (15) copies of each proposal, plus three additional copies of both the Cover Page and the Project Summary are required. The proposer should remove the acknowledgment postcards on the inside back cover of this guide, identify the proposal, address one to the proposed project director and one to the institution's business officer, and attach both firmly to the cover sheet of the official signed copy of the proposal. These cards, confirming the date of receipt of the proposal and assigning a proposal number (which should be used in all subsequent communications), will be returned upon receipt of the proposal package. NOTE: If such an acknowledgment card has not been received within 2 weeks of submission, the Foundation's Central Processing Section should be contacted promptly at 202/357-7853.

ADDRESS

All copies should be sent in a single package to:

Central Processing Section for
Comprehensive Assistance to Under-
graduate Science Education Program
National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20550

Hand-carried copies must be labeled as above and delivered in a single package to:

Room 220
Central Processing Section
National Science Foundation
1800 G Street, N.W.
Washington, D.C. 20550

ANNOUNCEMENT OF AWARDS

All decisions will be announced simultaneously through notification to the institution in May following the closing date. No information can be given concerning the probability of support for any proposal prior to this announcement.

PROPOSAL REVIEW

GENERAL INFORMATION

The Foundation's professional staff will be assisted in selection of awardees by reviewers convened at panel meetings. Panels reviewing each proposal will be composed primarily of college faculty and administrators, but may also include educational evaluators, students, and industrial scientists. Care will be taken to assure that proposals are reviewed by panels having an appropriate balance of science disciplines, institutional types, and other concerns important to a fair treatment of each application.

Proposal writers should be particularly sensitive to the need for coherence, clarity and rigor in the organization of proposals so that the review criteria may be applied properly by panelists.

Final decisions on proposals to be supported will be made by NSF. The primary consideration in the decision whether or not to fund a project, is merit as judged by the reviewing panelists. Normally, among comparable proposals judged to be of substantial but less than highest merit, additional factors may also be considered. These include geographical or disciplinary distribution of funds, distribution of awards among various types of institutions, or other criteria determined to be consistent with Foundation policy and legislative intents. Imbalances in success rates (awards/proposals received) of census regions, science disciplines or types of institution occurring over the history of CAUSE or individual states never having received a CAUSE grant may be used as additional selection factors.

PROPOSAL REVIEW CRITERIA

Reviewers will be instructed to consider elements described in each of the six major categories listed below and assign a numerical score to each major category based on a seven-point scale in which seven is considered excellent; five-good; three-fair; one-unacceptable. Reviewers will also be requested to provide comments regarding their ratings. These comments, together with the numerical ratings, will assist the Foundation in making critical judgments and decisions in the selection of proposals for award.

1. Local Review Statement

Consider:

- Characteristics and environment of the proposing institution
- Complementary nature of project and institution

- Plans for continuation of activities or improvements in post grant years

2. Needs/Project Objectives

Consider:

- Validity of expressed needs
- Match between needs and project objectives
- Match between project objectives and the CAUSE model

3. Project Plan

Consider:

- Adequacy of understanding of recent advances in science education and techniques
- Adequacy of proposed activities compared to possible alternative approaches
- Necessity of each proposed activity for meeting project objectives
- Logical sequencing and timing of activities
- Completeness, clarity, practicality and logical nature of the plan

4. Management/Costs

Consider:

- Suitability of management procedures
- Capabilities of staff for executing assigned responsibilities
- Distribution of responsibilities based on percentage of time committed and individual expertise
- Reasonableness of proposed expenditures
- Cost effectiveness

5. Evaluation

Consider:

- Provisions for internal monitoring including feedback and modification procedures
- Provisions for a summative look at the project outcomes and products
- Capabilities of staff and/or consultants for evaluation

6. Expected Benefits

Consider:

- Scientific relevancy of the proposed content
- Educational value for undergraduate science
- Possibility of long-term benefits to students, faculty or the institution
- Appropriateness of dissemination plans

OTHER CONSIDERATIONS IN SUBMITTING PROPOSALS

ACCESS TO PEER REVIEW INFORMATION

After final decisions have been announced, the Foundation will inform the project director of the reasons for its decision on a proposal. Verbatim copies of reviews, not including the identity of the reviewer, will automatically be mailed to respective project directors.

ASSURANCE OF COMPLIANCE WITH THE CIVIL RIGHTS ACT

If the applicant university or college has not filed an Assurance of Compliance with Title VI of the Civil Rights Act of 1964, as required by NSF regulations, pertinent forms and a copy of the regulations may be obtained by writing to the Foundation's Division of Grants and Contracts. The required Assurance Form, when completed by the institution, should be submitted to the Division of Grants and Contracts. Once an Assurance Form has been submitted by the applicant organization, it covers all proposals subsequently submitted by any department or other unit of that organization. Individual Assurance Forms are not necessary for each application or for each proposal. If there is any question about whether or not an institution has filed an Assurance of Compliance, the institution's business office should be consulted.

CONFIDENTIAL ASPECTS OF PROPOSALS AND AWARDS

A proposal that results in a grant becomes a part of the record of the Foundation's transactions, available

to the public upon specific request. Information that the Foundation and the grantee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law; therefore, any information that the applicant wishes to have the Foundation consider as privileged should be clearly marked as such and sent in a separate statement, two copies of which should accompany the proposal.

A proposal that does not result in a grant may be retained by the Foundation. Such a proposal will be released only: (1) with the consent of the proposer; or (2) to the extent required by law. A proposal may be withdrawn at any time prior to final action thereon by the Foundation.

GRANTEE MANAGEMENT AND ORGANIZATION DATA

If your institution has not received an NSF grant within the past 2 years, please fill out the Applicant Management and Organization Information card on the back of the brochure and attach it to the original copy of the proposal.

PROJECT MANAGEMENT

Successful proposers will receive additional detailed information on Project and Award Management soon after official announcement of Awards.

FORMS

INSTRUCTIONS FOR COMPLETING BUDGET FORMS

1. *Yearly Detailed Budget.* This form is intended to aid CAUSE staff and reviewers by identifying detailed items for which support is requested. One form should be used for each project year, which need not necessarily coincide with a calendar, academic or fiscal year. For each year, the item, the NSF contribution, the institution's contribution and the total should be entered. Additional detail, for example an itemized list of equipment, may be supplied on separate pages.

The estimated costs of the Project Director's attendance at a meeting in Washington, requiring three days and traveling on less-than-first class public transportation (maximum allowance for tourist class jet fare) to be held during each year of the project's operation should be entered as a request from the

Foundation. The policies of the grantee institution should be followed in determining the estimated cost of this item.

2. *Total Project Costs.* This single page budget form should show the sum of the Yearly Detailed Budget items for NSF and the institution and the total project cost for each item. Reference to the narrative page number should be placed in the left hand column.

3. *Summary Proposal Budget.* This standard NSF form will be used, in the event an award is made, to prepare the official budget for the project. Under the column headed "Funds Requested by Proposer," list only the NSF contribution to project costs. This column should correspond to the "NSF" column of the Total Project Costs budget. The second column entitled "Funds Granted by NSF" is for Foundation use only.

Cover Page
PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION
Directorate for Science Education

FOR CONSIDERATION BY NSF ORGANIZATIONAL UNIT COMPREHENSIVE ASSISTANCE TO UNDERGRADUATE SCIENCE EDUCATION (CAUSE)		CHECK ONE ☐ Regular ☐ Special
PROGRAM ANNOUNCEMENT/SOLICITATION NO. SE 81-30		CLOSING DATE FIRST FRIDAY OF NOVEMBER
NAME OF SUBMITTING ORGANIZATION TO WHOM AWARD SHOULD BE MADE (INCLUDE BRANCH/CAMPUS AND OTHER COMPONENT(S))		
ADDRESS OF ORGANIZATION (INCLUDE ZIP CODE)		
TITLE OF PROPOSED PROJECT		
REQUESTED AMOUNT	INSTITUTION CONTRIBUTION	TOTAL PROJECT COST
PROPOSED DURATION (CHECK) 12 MO. _____ 24 MO. _____ 36 MO. _____		PROPOSED STARTING DATE
PI/PD NAME AND SOCIAL SECURITY NO. (SSN)*		PI/PD PHONE NO. OFFICE: HOME:*
PI/PD DEPARTMENT	PI/PD ORGANIZATION	
HAS YOUR INSTITUTION RECEIVED A CAUSE AWARD? YES _____ ; NO _____ IF YES: AWARD NO. _____ MAJOR DISCIPLINES INVOLVED _____		
ARE ANY FUNDS FOR THE PROJECT PROPOSED HEREIN BEING REQUESTED IN ANOTHER PROPOSAL TO NSF OR ANOTHER FEDERAL AGENCY? _____ IF YES, INDICATE NSF PROGRAM OR AGENCY, PROPOSAL NUMBER(S), DATE SUBMITTED: _____		
TYPE OF PROPOSAL: SINGLE INSTITUTION _____ ; CONSORTIUM _____ IF SINGLE INSTITUTION PROPOSAL (CHECK ONE): 2-YEAR NON-BACCALAUREATE GRANTING _____ ; 4 OR 5-YEAR BACCALAUREATE GRANTING _____ ; MASTER DEGREE GRANTING _____ ; Ph.D. GRANTING _____ ; OTHER (SPECIFY) _____		
*Submission of home phone number and social security number is voluntary and will not affect the organization's eligibility for an award. However, they are an integral part of the NSF information system and assist in processing the proposal.		
PRINCIPAL INVESTIGATOR/ PROJECT DIRECTOR	AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	OTHER ENDORSEMENT (OPTIONAL)
NAME (Prof., Dr., Mr., Ms.)	NAME (Prof., Dr., Mr., Ms.)	NAME (Prof., Dr., Mr., Ms.)
SIGNATURE	SIGNATURE	SIGNATURE
TITLE	TITLE	TITLE
DATE	DATE	DATE

Directions and Codes for Completion of Lines 3 and 4 on Project Summary Form

N.B. THE FOLLOWING DESIGNATIONS SERVE ONLY TO ASSIST THE FOUNDATION IN ASSIGNING REVIEWERS AND OBTAINING GENERAL DATA.

Specify Subject-Matter Classification: Please identify the specific subject(s) in the proposal. The appropriate code(s) should appear on line 4 on the Project Summary.

CHEMISTRY

CA12 Analytical
CB12 Environmental Sciences
 (Chemistry)
CC12 General Chemistry
CD12 Organic
CE12 Physical
CF12 Chemistry, other (specify)

EARTH SCIENCES

EA49 Environmental Sciences
 (Earth Sciences)
EB42 Geochemistry
EC42 Geography (Physical)
ED42 Geology
EF42 Geophysics
EG49 Earth Sciences, other (specify)

ENGINEERING

NA51 Aeronautical
NB59 Bioengineering
NC53 Chemical
ND54 Civil
NE55 Electrical
NF56 Engineering Science
NG59 Environmental Sciences
 (Engineering)
NH56 Industrial
NL57 Materials
NM57 Metallurgical
NN59 Nuclear
NO59 Petroleum
NP59 Sanitary
NQ59 Engineering, other (specify)

LIFE SCIENCES

BA69 Agriculture
BB62 Anatomy
BC61 Botany (incl. Plant Physiology)
BD61 Cellular Biology
BE61 Ecology
BF61 Entomology
BG49 Environmental Sciences
 (Life)
BH61 General Biology
BI61 Genetics
BJ61 Horticulture
BK63 Microbiology
BL61 Molecular Biology
BM63 Physiology
BN61 Soil Science
BO61 Zoology
BP63 Life Sciences, other (specify)

MATHEMATICAL SCIENCES

MA21 Algebra or Number Theory
MB21 Applications of Mathematics
 (incl. Biometrics & Biostatistics)
MC21 Calculus
MD21 Computer Science
ME21 Geometry
MF21 Intro. College Mathematics
MG21 Logic or Foundations of Mathematics
MH21 Probability and Statistics
MI21 Mathematics, other (specify)

PHYSICAL SCIENCES

ZA11 Astronomy
ZB42 Atmospheric Sciences
 (excl. Meteorology)
ZC42 Metallurgy (excl. Met. Engr.)
ZD41 Meteorology

PHYSICS

PA13 Acoustics
PB13 Atomic and Molecular
PC13 Environmental Sciences
 (Physics)
PD13 General Physics
PE13 Nuclear
PF13 Optics
PG13 Solid State
PH13 Theoretical Physics
PI13 Physics, other (specify)

PSYCHOLOGY (excluding clinical)

YA79 Developmental
YB72 Environmental Sciences
 (Behavioral)
YC71 Experimental, Comparative or Physiological
YD79 General Psychology
YE79 Psychometrics
YF72 Social
YG79 Psychology, other (specify)

SOCIAL SCIENCES

SA81 Anthropology (specify)
SB89 Archaeology
SC82 Economics (excl. Bus. Admin.)
SD89 Environmental Sciences (Social)
SE89 Geography (other than physical)
SF83 History and Philosophy of Science
SG84 Linguistics
SH85 Political Science
SI89 Sociology (not incl. social work)
SJ89 Social Sciences, other (specify)

Major Discipline Classification: Please classify the proposal according to the following major group(s). The appropriate code(s) should appear on line 3 on the Project Summary.

BZ (Biology): Any subjects in category of "Life Sciences"
CH (Chemistry)
EN (Engineering)

EZ (Earth Sciences)
MA (Mathematics)
PY (Physics): Any subject in categories of "Physics" and "Physical Science"

SZ (Social Sciences): Any subjects in categories of "Psychology" and "Social Science"

PROJECT SUMMARY
Comprehensive Assistance to Undergraduate Science Education (CAUSE)

1. NAME OF INSTITUTION OR CONSORTIUM	2. PRINCIPAL INVESTIGATOR	CHECK ONE ☐ Regular ☐ Special
--------------------------------------	---------------------------	--

3. MAJOR DISCIPLINE CLASSIFICATION OF PROJECT*

4. SPECIFIC SUBJECT MATTER CLASSIFICATION OF PROJECT*

5. PROJECT CHARACTERISTICS. CHECK EITHER MAJOR OR MINOR EMPHASIS FOR ALL THAT APPLY.

	MAJOR	MINOR		MAJOR	MINOR
Audio visual material	_____	_____	Instructional modules	_____	_____
Construction/renovation	_____	_____	Learning Resource Center	_____	_____
Experience-based learning	_____	_____	Major curriculum change/	_____	_____
Facilities/lab improvements	_____	_____	Additions to curriculum		
Faculty development	_____	_____	Minority Students	_____	_____
Female students	_____	_____	New-degree program	_____	_____
Handicapped students	_____	_____	Pre-service teachers	_____	_____
Identification of prerequisite skills	_____	_____	Remediation	_____	_____
Individualized instruction	_____	_____	Science and Society	_____	_____
Instructional computing	_____	_____	Science for nonscience students	_____	_____
Instructional Equipment	_____	_____	Student research	_____	_____
			Univ./industry involvement	_____	_____
Other (specify) _____					
Other (specify) _____					
Other (specify) _____					

6. TOTAL UNDERGRADUATE ENROLLMENT

7. NUMBER OF PERSONS/YEAR EXPECTED TO RECEIVE INSTRUCTION UNDER PROJECT
 ESTIMATE THE PERCENTAGE OF THE ABOVE NUMBER WHICH ARE: MINORITIES _____ ; WOMEN _____ ; HANDICAPPED _____ ;
 FUTURE TEACHERS OF EARLY ADOLESCENTS _____

8. TITLE OF PROJECT

9. SUMMARY OF PROPOSED WORK (LIMIT TO 22 PICA OR 18 ELITE TYPEWRITTEN LINES)

YEARLY DETAILED BUDGET

ORGANIZATION _____							
FROM _____ TO _____							
		MO/YR		MO/YR			
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title; A.6. show number in brackets)				NSF FUNDED PERSON-MOS.		NSF	ORGANIZATION
				CAL.	ACAD		
1. _____						\$	\$
2. _____							
3. _____							
4. _____							
5. () OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PG.)							
6. () TOTAL SENIOR PERSONNEL (1-5)							
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. () POST DOCTORAL ASSOCIATES							
2. () OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)							
3. () GRADUATE STUDENTS							
4. () UNDERGRADUATE STUDENTS							
5. () SECRETARIAL-CLERICAL							
6. () OTHER							
TOTAL SALARIES AND WAGES (A+B)							
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A+B+C)							
D. PERMANENT EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$1,000; ITEMS OVER \$10,000 REQUIRE CERTIFICATION)							
TOTAL PERMANENT EQUIPMENT							
E. TRAVEL 1. DOMESTIC (INCL. CANADA AND U.S. POSSESSIONS)							
2. FOREIGN							
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$ _____							
2. TRAVEL _____							
3. SUBSISTENCE _____							
4. OTHER _____							
TOTAL PARTICIPANT COSTS							
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							
2. PUBLICATION COSTS/PAGE CHARGES							
3. CONSULTANT SERVICES							
4. COMPUTER (ADPE) SERVICES							
5. SUBCONTRACTS							
6. OTHER							
TOTAL OTHER DIRECT COSTS							
H. TOTAL DIRECT COSTS (A THROUGH G)							
I. INDIRECT COSTS (SPECIFY)							
TOTAL INDIRECT COSTS							
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							
K. RESIDUAL FUNDS							
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$	\$

TOTAL PROJECT COSTS

ORGANIZATION

NARRATIVE PAGE REFERENCE

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title; A.S. show number in brackets)	NSF FUNDED PERSON-MOS.			NSF	ORGANIZATION	TOTAL
	CAL.	ACAD	SUMR			
1.				\$	\$	\$
2.						
3.						
4.						
5. () OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PG.)						
6. () TOTAL SENIOR PERSONNEL (1-5)						
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)						
1. () POST DOCTORAL ASSOCIATES						
2. () OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)						
3. () GRADUATE STUDENTS						
4. () UNDERGRADUATE STUDENTS						
5. () SECRETARIAL-CLERICAL						
6. () OTHER						
TOTAL SALARIES AND WAGES (A+B)						
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A+B+C)						
D. PERMANENT EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$1,000; ITEMS OVER \$10,000 REQUIRE CERTIFICATION)						
TOTAL PERMANENT EQUIPMENT						
E. TRAVEL 1. DOMESTIC (INCL. CANADA AND U.S. POSSESSIONS)						
2. FOREIGN						
F. PARTICIPANT SUPPORT COSTS						
1. STIPENDS \$						
2. TRAVEL						
3. SUBSISTENCE						
4. OTHER						
TOTAL PARTICIPANT COSTS						
G. OTHER DIRECT COSTS						
1. MATERIALS AND SUPPLIES						
2. PUBLICATION COSTS/PAGE CHARGES						
3. CONSULTANT SERVICES						
4. COMPUTER (ADPE) SERVICES						
5. SUBCONTRACTS						
6. OTHER						
TOTAL OTHER DIRECT COSTS						
H. TOTAL DIRECT COSTS (A THROUGH G)						
I. INDIRECT COSTS (SPECIFY)						
TOTAL INDIRECT COSTS						
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						
K. RESIDUAL FUNDS						
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				\$	\$	\$

SEE INSTRUCTIONS ON
REVERSE BEFORE
COMPLETING)

SUMMARY
PROPOSAL BUDGET

ORGANIZATION				FOR NSF USE ONLY			
				PROPOSAL NO.		DURATION (MONTHS)	
PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR				AWARD NO.		Proposed	Granted
A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title; A.6. show number in brackets)				NSF FUNDED PERSONS		FUNDS REQUESTED BY PROPOSER	FUNDS GRANTED BY NSF (IF DIFFERENT)
				CAL.	ACAD	SUMR	
1.							\$
2.							
3.							
4.							
5. () OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)							
6. () TOTAL SENIOR PERSONNEL (1-5)							
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1. () POST DOCTORAL ASSOCIATES							
2. () OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)							
3. () GRADUATE STUDENTS							
4. () UNDERGRADUATE STUDENTS							
5. () SECRETARIAL-CLERICAL							
6. () OTHER							
TOTAL SALARIES AND WAGES (A+B)							
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A+B+C)							
D. PERMANENT EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$1,000; ITEMS OVER \$10,000 REQUIRE CERTIFICATION)							
TOTAL PERMANENT EQUIPMENT							
E. TRAVEL 1. DOMESTIC (INCL. CANADA AND U.S. POSSESSIONS)							
2. FOREIGN							
F. PARTICIPANT SUPPORT COSTS							
1. STIPENDS \$							
2. TRAVEL							
3. SUBSISTENCE							
4. OTHER							
TOTAL PARTICIPANT COSTS							
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES							
2. PUBLICATION COSTS/PAGE CHARGES							
3. CONSULTANT SERVICES							
4. COMPUTER (ADPE) SERVICES							
5. SUBCONTRACTS							
6. OTHER							
TOTAL OTHER DIRECT COSTS							
H. TOTAL DIRECT COSTS (A THROUGH G)							
I. INDIRECT COSTS (SPECIFY)							
TOTAL INDIRECT COSTS							
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS GPM 252 AND 253)							
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						\$	\$
PI/PD TYPED NAME & SIGNATURE*				DATE	FOR NSF USE ONLY		
INST. REP. TYPED NAME & SIGNATURE*				DATE	INDIRECT COST RATE VERIFICATION		
					Date Checked	Date of Rate Sheet	Initials - DGC
							Program

Instructions for Use of Summary Proposal Budget (NSF Form 1030)

1. General

- a. Each grant proposal, including requests for supplemental or incremental funding, must contain a Summary Proposal Budget in this format unless a pertinent program guideline specifically provides otherwise.
- b. Copies of NSF Form 1030 and instructions should be reproduced locally, as NSF will not supply the form.
- c. A separate form should be completed for each year of support requested. An additional form showing the cumulative budget for the full term requested should be completed for proposals requesting more than one year's support. Identify each year's request (e.g., "First year _____," or "Cumulative Budget," etc.) in the remarks section.
- d. The summary does not eliminate the need to fully document and justify the amounts requested in each category. Such documentation should be contained, as appropriate, on a budget explanation page immediately following the budget in the proposal. (See below for discussion on various categories).

2. Budget Line Items

A full discussion of the budget and the allowability of selected items of cost is contained in NSF Grants for Scientific Research (NSF 78-41), NSF Grant Policy Manual (NSF 77-47), and other NSF program brochures and guidelines. Following is a brief outline of budget documentation requirements, by line item:

A., B., and C. Salaries, Wages, and Fringe Benefits (GPM 511). On the budget explanation page, list individually all senior personnel who were grouped under A 5, the requested person-months to be funded, and rates of pay.

D. Permanent Equipment (GPM 512 and 204.2). List item and dollar amount for each item exceeding \$1,000; items over \$10,000 require certification. Fully justify.

E. Travel (GPM 514). The type and extent of travel and its relation to the project must be addressed. Travel outside the U.S. and its possessions, Puerto Rico, and Canada must be itemized by destination and cost and justified. Dates of foreign visits or meetings should be included. Fare allowances are limited to round-trip, jet-economy rates. Consultant travel should be included here.

F. Participant Support Costs (GPM 518). Normally may only be requested under specific science education programs or for grants supporting conferences or symposia. Consult Grants for Scientific Research or specific program guidelines.

G. Other Direct Costs.

1. Materials and Supplies (GPM 513). Indicate types required and estimate costs.
2. Publication Costs/Page Charges (GPM 517). Estimate cost of preparing and publishing project results.
3. Consultant Services (GPM 516). Indicate name, daily compensation (limited to \$193/day), and estimated days of service, and justify.
4. Computer Services (GPM 515). Include justification based on established computer service rates at the proposing institution. Computer equipment leasing is included here. Purchase of equipment is included under D.
5. Subcontracts (GPM 623). Must be approved in advance. Include a completed budget and justify details.
6. Other. Itemize and justify.

I. Indirect Costs (GPM 530). Specify current rate and base. Use current rate negotiated with the cognizant Federal negotiating agency. See GPM for special policy regarding grants to individuals, travel grants, equipment grants, doctoral dissertation grants, and grants involving participant support costs.

K. Residual Amounts (GPM 253). For incremental funding requests on continuing grants, enter the amount in excess of 10%. If less than 10%, indicate: none. Residual funds should not be reflected in the budget categories A-I. A justification for carryover of funds in excess of 10% is required.

L. Item L will be the same as item J unless the Foundation disapproves the carryover of funds. If disapproved, Item L will equal J minus K.

PRE-SUBMISSION CHECKLIST

The "Intent to Submit" card should be mailed separately *before* submission of the proposal.

Your proposal package should contain:

- Cover Page*
- Project Summary
- Yearly Detailed Budget (p. 15)
- Total Project Costs (p. 16)
- Summary Proposal Budget (p. 17)
- Table of Contents
- Local Review Statement (2 page limit)*
- Project Description (20 page limit)
- Project Evaluation (2 page limit)
- Applicants' current science activities (p. 5)
- Statement for Equipment Items exceeding \$10,000*
- Flood Disaster Statement (if needed) (p. 6)
- Budget for Sub-Contracts or Sub-Awards (if needed)

* These items require the signature of the authorized organizational representative.

90%